

CLAIMS

1. A vapor-permeable and waterproof sole for shoes, particularly but not exclusively for open shoes such as sandals, sabots and the like, characterized in that it comprises the following combination of elements:

- 5 -- a lower element (11, 111, 211, 311), on which a tread (12, 112) is integrated in a downward region, said lower element (11, 111, 211, 311) being selected between an element that is vapor-permeable at least in an upward region and a perforated element;
- an upper vapor-permeable and/or perforated element (13, 113);
- 10 -- a vapor-permeable and waterproof membrane (16, 116, 216, 316), interposed between said lower element (11, 111, 211, 311) and said upper element (13, 113), said membrane and said lower element (11, 111, 211, 311) and said upper element (13, 113) being joined hermetically in the perimetric regions of mutual contact,
- 15 -- at least one vapor-permeable comfort layer (14, 114), which is included in said lower element (11, 111, 211, 311) and/or in said upper element (13, 113) and is made of three-dimensional fabric, forming a ventilation gap (19, 119).

2. The sole for shoes according to claim 1, characterized in that said upper element (13, 113) comprises said at least one vapor-permeable comfort layer (14, 114).

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3. The sole for shoes according to claim 2, characterized in that said upper element (13, 113) comprises a first layer (18) for contact with the sole of the foot that fits said sole, which is made of vapor-permeable and/or perforated material, a second layer that is constituted by said vapor-permeable comfort layer (14, 114), arranged below said first layer (18) and made of a three-dimensional fabric, a third layer (20) being provided below said vapor-permeable comfort layer (14, 114), said third layer (20) being contoured anatomically with respect to the sole of the foot and being vapor-permeable and/or perforated, said vapor-permeable comfort layer (14, 114)

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having smaller plan dimensions than said third layer (20) and being arranged inside a complementary flat cavity formed centrally with respect to said third layer (20).

4. The sole for shoes according to claim 3, characterized in that a
5 fourth perforated or vapor-permeable layer (21) for modulating the hardness of said sole is provided below said third layer (20).

5. The sole for shoes according to one or more of the preceding claims, characterized in that it comprises two vapor-permeable comfort layers (14, 114) arranged in series to each other.

10 6. The sole for shoes according to one or more of claims 3 to 5, characterized in that said first layer (18) is made of perforated leather.

7. The sole for shoes according to one or more of claims 3 to 6, characterized in that said third layer (20) is made of expanded material that is perforated substantially at right angles to the extension of said sole.

15 8. The sole for shoes according to one or more of claims 3 to 7, characterized in that said first layer (18) is folded outwardly so as to wrap around the edge of said second layer (14).

9. The sole for shoes according to one or more of claims 3 to 7, characterized in that said first layer (18) is folded outwardly so as to wrap
20 around the edge of said lateral edge of said third layer (20).

10. The sole for shoes according to one or more of the preceding claims, characterized in that said three-dimensional fabric is of the air mesh type.

11. The sole for shoes according to one or more of the preceding
25 claims, characterized in that said three-dimensional fabric is of the needle-punched type.

12. The sole for shoes according to one or more of the preceding claims, characterized in that along the plan extension of the upper part of said lower element (111) there is a portion (117, 217, 317) provided with
30 lateral venting elements (106, 206) between the outside of said sole (100,

100a, 200, 300, 400, 500, 600) and the inside of said portion (117, 217, 317), said lateral venting elements (106, 206) being functionally connected to said membrane (116, 216, 316).

13. The sole for shoes according to claim 12, characterized in that
5 said portion (117) has, in its central part, a hollow region (117a, 217a), which is delimited perimetrically by edges (117b), said lateral venting elements (106, 206) being formed in said edges (117b) and being constituted by through venting channels (107) for functional connection between the inside of said hollow region (117a, 217a) and the outside of
10 said sole (100, 100a, 200, 300, 400, 500, 600).

14. The sole for shoes according to claim 13, characterized in that a layer-like latticed element (120) is arranged inside said hollow region (117a), forms cavities and is perforated substantially at right angles to the extension of the sole.

15 15. The sole for shoes according to claim 13, characterized in that a vapor-permeable element (120a) is arranged inside said hollow region (117a).

16. The sole for shoes according to claim 13, characterized in that protrusions (220a) extend from the inside of said hollow region (217a)
20 substantially at right angles to the extension of said sole (200), said protrusions forming a lattice-like structure that forms cavities, said protrusions (220a) having a height that is substantially equal to the depth of said hollow region (217a).

17. The sole for shoes according to claim 13, characterized in that
25 said upper portion (317) of said lower element (311) is constituted by a corresponding vapor-permeable layer-like element (320) that extends along the entire transverse extension of said upper part (317).

18. The sole for shoes according to one or more of the preceding claims, characterized in that said lower element (11, 111, 211, 311) has a
30 plurality of through holes (15, 415, 515, 615) that are substantially

perpendicular to the extension of said sole.

19. The sole for shoes according to one or more of the preceding claims, characterized in that a protective element (18, 118, 218, 318) is coupled to said membrane (16, 116, 216, 316) at the face that is directed
5 toward said lower element (11, 111, 211, 311) and is constituted by a layer of a material that is resistant to hydrolysis, water-repellent, vapor-permeable or perforated, said protective element (18, 118, 218, 318) having the same plan dimensions as said membrane (16, 116, 216, 316).

20. The sole for shoes according to one or more of the preceding
10 claims, characterized in that said lower element (11, 111, 211, 311) and said upper element (13, 113) are fixed by spot gluing or perimetric gluing of the various component layers.

21. A shoe, particularly but not exclusively of the open type such as sandals, sabots and the like, characterized in that it comprises a sole
15 according to one or more of the preceding claims.